

development of digital signal processing enables digital performance which exceeds normal analog voice operation.

In addition, digitized speech provides the inherent property of "scanner-proof" security. Each user is guaranteed a significant level of privacy and security from scanners typically available today. Sophisticated encryption technology which is being developed is able to further enhance security. This is an especially important characteristic for sensitive tactical communications used by a variety of Public Safety agencies as well as for the business community in general.

Digital technology also allows the design of a signalling structure which has the flexibility to handle a variety of features not capable of being offered by analog technology. Such features include, "data-over-voice" signalling which allows the enhanced efficiency of sending brief packets of data messages in the otherwise unused blank space between spoken words; automatic power control of subscriber units which allows improved frequency reuse; dynamic bandwidth application which allows discrete, adjacent radio channels to be combined to provide higher bandwidth rates where and when needed so bursts of very high speed data can be sent; and, repeater signal regeneration which improves the signal to noise ratio and results in significantly improved quality in the repeated signal.

Most importantly for purposes of this proceeding is the fact that digital radio, properly implemented, offers substantial increases in capacity of communications transmitted over a given

radio channel. This is true whether the intelligence transmitted is voice or data. For example, using TDMA technology it is possible to increase the voice capacity of a given 12.5 kHz channel by a factor of 2. That is, two voice communications links can occur simultaneously within a single 12.5 kHz wide channel. Relative to the standard 25 kHz analog channel which is currently capable of providing only one voice communications link, digital technology provides the ability to have 4 voice communications link in a channel of the same 25 kHz bandwidth. Similar efficiencies are possible with data in view of the fact that TDMA data rates in 12.5 kHz and 25 kHz channels can approach 16 kb/s and 32 kb/s respectively.

As mentioned above, digital technology is clearly the technology of choice for new telecommunications systems. Because there is a tremendous amount of research being done on digital technology for use in telephony and a variety of PLMR and common carrier radio systems (such as cellular radio, E-SMR and PCS) in both the United States and abroad, PLMR users below 512 MHz will be able to take advantage of the R&D already performed. The same can not be said for VNB technology inasmuch as there is virtually no proven equipment in the marketplace. Moreover, even if such equipment was in existence, the economies of scope and scale for VNB equipment pale in comparison to that for digital equipment.

B. Trunking Technology

As mentioned above, Ericsson believes trunking technology should be permitted in the PLMR band below 512 MHz. Even

assuming the Commission does not require channelization other than that which exists at the present time (i.e., 25 kHz or 30 kHz channels using analog transmission), a change in the rules to permit trunking techniques would result in an overall capacity increase and at the same time improve the quality of communications. Reiterating the appeal to the Commission to permit a variety of technologies to achieve the requisite increase in spectrum, advanced digital techniques such as 12.5 kHz trunked TDMA systems can increase capacity significantly more than that which exists today for conventional analog PLMR systems.

Because the benefits of trunking are so apparent, notwithstanding what ultimate decision the Commission makes on channel bandwidths, Ericsson submits the Commission should certainly allow, indeed encourage, trunked radio systems.

C. Consolidated Service Bands/Contiguous Channels

Critical to the entire Refarming discussion is the issue of consolidating service categories and making contiguous channel allocations within the bands. Ericsson supports the Commission's proposal to significantly reduce the number of categories of users in the PLMR band below 512 MHz. This will eliminate a complex set of user categories which are largely irrelevant in today's market. More importantly, the reduction in the number of categories of PLMR users will make it easier for the Commission to assign contiguous bands of spectrum to a smaller number of classes of users. Reducing the number of classes will improve

spectrum efficiency in that users such as police and fire eligibles will now be allocated channels from the same pool of frequencies and can, therefore, utilize shared systems.

Though Ericsson's choice would be to accomplish Refarming by utilizing digital technologies and 25 kHz channel bandwidths thus avoiding rechannelization of any kind, it recognizes that there may be equities that suggest 12.5 kHz channel spacing is an appropriate step for the Commission to take to implement Refarming. Assuming that to be the case, Ericsson strongly suggests the FCC adopt a channel plan that places channels in the same service band contiguous to one another rather than using the channel plan set out in its current proposal in which 5 kHz and 6.25 kHz channels are interleaved throughout the band.

The placement of channels contiguous to one another is a very important step in ensuring that all technologies are able to be implemented in the marketplace. Though Ericsson believes the use of VNB technology is riddled with potential technical problems and is unproven in the stressed and congested PLMR environment, there may be some PLMR users who have a contrary view. Within the constraints of certain minimum technical rules adopted by the Commission as urged above, it is Ericsson's belief that such users should have the ability to implement VNB systems if they choose. This can be accomplished by taking 25 kHz or 12.5 kHz channels and splitting them into VNB channels.

By the same token, while the Commission believes that VNB technology should be the benchmark technology, most others in the

PLMR community do not believe it is appropriate for implementation at this point in time. Ericsson believes wider bandwidth, digital systems (which exist today and which are proven in the marketplace) are more appropriate for implementation in the PLMR band below 512 MHz because such systems will be able to use 12.5 kHz channels or combine 12.5 kHz channels into larger bandwidth channels to provide state of the art telecommunications systems for the PLMR community. The ability to combine 12.5 or 25 kHz channels will enable techniques such as TDMA to be used to provide highly efficient, high capacity systems capable of voice and high speed data transmission.

The critical aspect of this discussion is that contiguous channels with large band groupings provide the opportunity for manufacturers to design systems based on either technology. The Commission's present VNB proposal with interleaved channels for a variety of different services makes it extremely difficult for manufacturers to combine channels to provide wideband service.

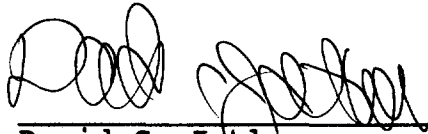
V. Conclusion

As one of the world's largest designers of telecommunications systems for the PLMR community, Ericsson has had significant experience in analyzing the performance capabilities of a wide variety of technologies. Based on this experience Ericsson concludes that the use of very narrowband technology as the benchmark for the PLMR band below 512 MHz is

not the most suitable to effectuate the goals set by the Commission in this proceeding. Ericsson believes that the most efficient manner for the Commission to meet its goals is to set a spectrum efficiency standard that must be met by all PLMR systems by a date certain. Then, a regulatory framework should be set in place which allows manufacturers and users to determine, in their respective best judgement, which type of system best suits their needs.

Respectfully submitted,

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May 28, 1993